

# ***Interactive comment on “Updated MISR Over-Water Research Aerosol Retrieval Algorithm Part 2: A Multi- Angle Aerosol Retrieval Algorithm for Shallow, Turbid, Oligotrophic, and Eutrophic Waters” by James A. Limbacher and Ralph A. Kahn***

**Anonymous Referee #1**

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Review of AMT-205-2018 by Limbacher and Kahn

Summary: The authors have upgraded their research algorithm (RA) in order to simultaneously derive aerosol optical depth (AOD), Ångström exponent (ANG) and remote sensing reflectance (R<sub>rs</sub>) from MISR observations over water. AOD and ANG are validated (compared to AERONET) and retrievals of R<sub>rs</sub> and gradients appear realistic. There are case studies over a variety of water types (ranging from clear to turbid -

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based on a new productivity/turbidity index scale (PTI)), and validation of AOD and ANG are from more than 2000 retrieved cases.

Overall: This paper is a suitable for AMT and provides a nice scientific analysis. Overall, I have no major objections to this paper being published, and have no compelling need for additional analyses. The results look good, and I would like to see (in a future study), the algorithm going “global”. The figures are informative, and almost works of art (they will make beautiful posters).

I am curious why there are no MODIS-OC or AERONET co-authors, (or MISR-SA authors for that matter), considering the heavy use of their products. Yes, the products are freely available, but I don’t believe acknowledgment-only is sufficient in this case.

One gripe is the appearance of too much self-referencing within the text. I believe the overall citation list is fair, but we don’t need to see so much “Limbacher and Kahn” and “Kahn et al.” within the text. I would rather see this space used to quickly describe the things that may be within these references. For example, I find lines 1-15 on Page 4 to be very confusing. I also don’t like the equations. Is there any way to write these things without so many subscripts and superscripts? Finally, there are places in the text where the authors are claiming that because it looks good, it must be good (page 9, line 16 for example).

I wonder about the PTI metric. It appears useful, but calling it “productivity” may need validation. I do not have a better suggestion for the name, but should be more descriptive of what it is, rather than what is the desired inference.

I tried something new, which is to annotate the PDF (with red text). Some of my comments are questions to answer; others are possible suggestions for text revision. Others are tiny issues of punctuation. I hope the uploaded supplement will solve the problem of trying to align line/page numbers when revising the text.

Overall, a good effort, and I think publishable with minor revisions.

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Please also note the supplement to this comment:

<https://www.atmos-meas-tech-discuss.net/amt-2018-205/amt-2018-205-RC2-supplement.pdf>

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-205, 2018.

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